A NATIONAL PERSPECTIVE ON WILDLIFE SERVICES' ROLE IN THE MANAGEMENT OF BLACKBIRD-HUMAN CONFLICTS

WILLIAM H. CLAY, USDA-APHIS-Wildlife Services, 4700 River Road, Unit 87, Riverdale, MD 20737-1234

Abstract: The Wildlife Services (WS) program is a federal unit of the United States Department of Agriculture's Animal and Plant Health Inspection Service (APHIS). WS maintains an important role in providing federal leadership in managing problems caused by wildlife including migratory birds such as blackbirds. As with state and other federal wildlife management agencies, the responsibilities and authorities of WS to manage conflicts caused by blackbirds and other wildlife are shared or regulated between agencies. However, there are additional specific authorities that enable WS to protect American agriculture and other resources from wildlife damage. WS responds to requests for assistance from various entities and manages the scope of wildlife problems from national, regional, state, and district organizational levels. WS has been involved in studying, conducting, and perfecting various methods of managing damage to agricultural resources and other property caused by blackbirds, for more than 20 years. While collaborating with other agencies, universities, groups, and individuals, WS addresses a diversity of problems associated with blackbirds and other wildlife through both research and operational wildlife damage management. WS provides technical assistance, as well as conducts direct wildlife damage management assistance following requests from individuals or groups, referred to as cooperators. Cooperators may represent a variety of private, public, or governmental interests. Understanding the role of the WS program and how it operates is an important step in working together to develop or improve existing methods of managing conflicts caused by blackbirds.

Key words: birds, blackbirds, DRC-1339, propane, pyrotechnics, USDA, wildlife, wildlife damage, wildlife services, WS.

INTRODUCTION

Wildlife is receiving increased attention as people develop a broadened environmental consciousness. The well-being of wildlife seems to generate strong emotional sensitivity in many people, particularly when it involves the management of some alluring species. The level of national attention that wildlife receives today will likely continue for many reasons. Those reasons may include increasing suburban development, the shift of public attitudes toward the positive welfare of wildlife, increasing media interest in wildlife issues, and the adaptability and overabundance of some wildlife species.

In some instances, however, an overabundance of certain wildlife species has led to conflicts between human and wildlife interests. Though federal and state governments manage wildlife populations to ensure future abundance, they are also expected to assume responsibility for managing the conflicts that may occur between wildlife and humans. The management of damage to agricultural resources and other conflicts caused by blackbirds in the United States is an issue that the U. S. Department of Agriculture's Wildlife Services (WS) program has faced for many years.

A failure to readily identify appropriate solutions to wildlife conflicts can result in decisions and actions that are ecologically and biologically damaging. Professional wildlife biologists and technicians, such as those employed by WS, can sometimes prevent such problems.

This paper will provide information regarding the function and legal authority of the WS program, a description of the organizational structure and operational modes of the program, and discussion of the types of assistance provided by WS to the public in managing conflicts caused by wildlife, including blackbirds.

ROLE AND LEGAL AUTHORITY OF THE WILDLIFE SERVICES PROGRAM

Federal and state governments are responsible for maintaining healthy, stable wildlife populations. Wildlife damage management responsibilities and authorities fall to different agencies depending on the species, type of problem, and location. The U.S. Fish and Wildlife Service (USFWS) has primary responsibility for managing migratory birds and federally listed threatened and endangered species. State wildlife management agencies have primary authority for the management of nonmigratory birds and all other species of wildlife not federally listed as threatened or endangered. The U. S. Department of Agriculture (USDA) is authorized by legislation to provide assistance upon request of state governments, private individuals, and other federal agencies to control and prevent damage and disease caused or carried by wildlife.

The WS program is authorized by Congress to conduct activities relating to most wildlife damage situations. The primary statutory authority for the WS program is the Act of March 2, 1931, (7 USC 426-426c, and as amended; 46 Stat. 1468).

WS assists in solving problems that are created when species of wildlife cause damage to agriculture. WS personnel also assist with wildlife problems involving urban or natural resources as well as threats to human health and safety. WS field personnel are required to conduct activities in accordance with all federal and state laws and regulations, and in cooperation with wildlife management professionals from federal or state agencies. This includes the WS program's federal obligation to conduct its activities in compliance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 USC 4321 et seq.). NEPA includes ". . . the requirement that all major federal actions be evaluated in terms of their potential significant impacts on humans and the natural environment for the purpose of avoiding or, where possible, minimizing significant adverse impacts. (USDA 1994). The WS program is a federal cooperative program, and operates through a cost-sharing method, which is an integral part of the program. Most WS field activities are funded cooperatively by various federal, state, or local agencies; industry or private associations; or individuals who request wildlife damage management assistance.

INTERAGENCY AND OTHER COOPERATIVE ACTIVITIES

The activities and accomplishments of the WS program are the result of the cooperative relationship the program has with the public. In conducting its activities, WS collaborates with a variety of entities, which includes many state wildlife agencies, state, county, and local health departments, the USFWS, the U. S. Environmental Protection Agency (EPA), the U.S. Food and Drug Administration, private businesses, and universities. The WS program conducts many educational activities, including student intern programs, in collaboration with universities throughout the country. In addition, input from the USDA Secretary's National Wildlife Services Advisory Committee (NWSAC) provides guidance from diverse stakeholders representing agricultural, general wildlife or wildlife management, animal welfare, academia, health and public safety, and the pest control industry.

ORGANIZATIONAL DESCRIPTION OF THE WILDLIFE SERVICES PROGRAM

The organizational reporting system of the WS program includes the Deputy Administrator's office, which oversees 2 Regional Offices (Eastern and Western), the Operational Support Staff Office, and the National Wildlife Research Center. Regional Directors manage 23 Eastern Region Directors and 16 Western Region Directors. The 39 State Directors manage a field force that may include District and Assistant District Supervisors and a combination of state and federal employees usually called Wildlife Damage Management Specialists. The National Wildlife Research Center Director oversees a total of 8 field stations located throughout the United States. The WS Pocatello Supply Depot Manager reports to the Idaho State Director

RESEARCH AND METHODS IMPLEMENTATION

The WS program uses significant resources each year to support research efforts aimed at the development and improvement of techniques for reducing damage caused by wildlife. WS scientists conduct most of this research at the National Wildlife Research Center (NWRC), headquarters in Fort Collins, Colorado, and at 8 field stations located throughout the country. Some of this research is conducted in collaboration with other federal and state natural resource agencies, and universities.

As part of the WS program, NWRC is a world leader in conducting research to develop both nonlethal and lethal wildlife damage management methods. As the U.S. population has increased so has the number and nature of problems caused by wildlife. The focus of research conducted by NWRC research scientists has evolved to meet changing demands for effective solutions (Tobin 2002). The WS NWRC is the only federal facility devoted entirely to the development of new environmentally-safe and cost-effective wildlife damage management techniques. Many of the nonlethal methods used by wildlife professionals in federal and state natural resource agencies and by private pest control companies have stemmed from research conducted at NWRC.

Operational Wildlife Damage Management Field Activities

WS operational field activities provide first-hand assistance to individual stakeholders, public institutions, or other agencies that request assistance in managing conflicts caused by wildlife. Field personnel involved in operational activities analyze the circumstances of a wildlife conflict (e.g., the resource damage or conflict; the ecology of the associated wildlife; human sociology; environmental factors; local, state and federal laws and regulations) and apply the various methods and strategies of wildlife damage management in direct response to cooperator requests for assistance. When providing technical assistance or direct wildlife damage management, field personnel also help the public to understand the nature of wildlife damage conflicts and the proposed methods or strategies intended to alleviate the conflicts.

The WS program protects resources grouped primarily into 4 general categories:

- Agriculture and livestock production including grains, sunflowers, vegetables, fruits, nuts, com-

mercial forest resources, and aquaculture resources such as cultivated trout, catfish, bait fish, marine shellfish

- Natural resources such as wildlife (including threatened and endangered species), wildlife habitats, rangelands
- Urban property including private homes, public buildings, airports, golf courses, and industrial facilities such as power plants
- Public health and safety at airports, in aircraft, and when human health is threatened by the presence or activity of wildlife or wildlife-borne diseases.

BLACKBIRDS AND SCOPE OF CONFLICTS

Red-winged blackbirds (*Agelaius phoeniceus*), common grackles (*Quiscalus quiscula*), and yellow-headed blackbirds (*Xanthocephalus xanthocephalus*) cause severe damage to ripening crops throughout the United States. Blackbirds sometimes have been identified as having destroyed entire fields of sunflower or portions of grain crops in just a few days. After the nesting season, blackbirds gather in large flocks to forage in grain fields during the day and roost at night in dense cattail marshes in the northern Great Plains. During the winter, blackbirds numbering in the millions roost in trees in the southern United States.

It is important to objectively examine potential damage levels in a field before investing resources on blackbird damage management. WS program personnel are often called upon to conduct crop damage surveys to estimate damage levels when wildlife is suspected to have caused damage (Linz et al. 1997). Over the last several years, an increasing number of requests for assistance have been received by the WS program both for conducting research to improve delivery of management methods and for operational wildlife damage management activities to help provide some immediate relief from blackbird damage. These increases are underscored by trends identified during 3 WS Research Needs Assessments as well as the number and type of research publications produced by NWRC research scientists.

In 1989, 1996, and 2001 WS Research Needs Assessments were conducted in collaboration with WS program field personnel, management, and stakeholders in various industries. The objective was to establish a system to identify and prioritize research and methods development needs of the WS program and its stakeholders to ensure the availability of a fully adequate range of effective and acceptable wildlife damage management methods.

The results of these surveys, together with Congressional and administrative guidance, are the primary means by which NWRC allocates resources to the specific priority research needs of the WS program. Blackbirds and starlings (*Sturnus vulgaris*) were among the top species priorities identified by all 3 surveys. Blackbirds were listed in relation to a number of problems, with emphases on feedlots, roost control in urban and suburban environments, and depredations on sprouting and ripening grains. Respondents expressed a need for more effective methods, both lethal and nonlethal, to control blackbird problems (Tobin 2002).

Tobin (2002) evaluated the focus of NWRC research by tabulating, according to subject, articles listed in NWRC annual publication lists. By far, articles on blackbirds and starlings comprised the largest number of publications during the last 3 decades. During the 1970s, much of the blackbird and starling research focused on evaluating 4-aminopyridine, or Avitrol®. During the 1980s, blackbird research shifted to developing methods for controlling nuisance roosts, reducing problems at livestock feedlots, and reducing agricultural depredations on grain crops, particularly corn and rice. During the 1990s, research again shifted, this time to developing methods to reduce blackbird depredations to seeded and ripening rice and ripening sunflower. This included evaluation of nonlethal repellents, development of an effective bait for delivering an avicide, and development of techniques to manage blackbird roosting habitat around sunflower fields.

Since 1970, the commodity groups that were the subject of the most NWRC publications during each decade included corn, rice, and sunflower. This trend reflects the emphasis of NWRC bird research on blackbirds and starlings (Tobin 2002).

Further information on the importance of blackbird damage is available from Wildlife Services' Management Information System (MIS) where statistics are compiled and data can be retrieved on program activities. Resource loss information collected through the WS MIS from FY 1996 through FY 2000 was examined to identify impact and a general sense of location of damage caused by blackbirds. The WS MIS data involve only the damage reported to the WS program and do not include all damage that actually occurs within a particular industry or nationwide. Also, beginning in FY 1998, the WS program stopped collecting dollar amounts of damage caused by wildlife.

Dollar values are available for 2 (i.e., FY 1996 and FY 1997) of the 5 fiscal years examined during the development of this presentation. WS identified the percent impact of dollar loss reported to the WS program regarding blackbird damage during these 2 fiscal years. Additionally, WS identified which states reported damage in the general categories of agriculture, health and safety, and property in every year of the 5 years examined. Though possibly significant at local levels, the percent dollar value of damage within the natural resource category was small when compared to the

combined dollar total of all damage types for both FY 1996 and FY 1997.

- The cumulative dollar value damage by blackbirds to all resources for FY 1996 and FY 1997 totaled $2,829,313.

Agriculture

- Total dollar value of agricultural loss reported to the WS program for FY 1996 and FY 1997 totaled $2,478,520. This is approximately 8% of all resources for the same fiscal years.
- States reporting agricultural damage in every year of the reporting period (Fiscal Year (FY) 1996-2000) are shown in Fig. 1.

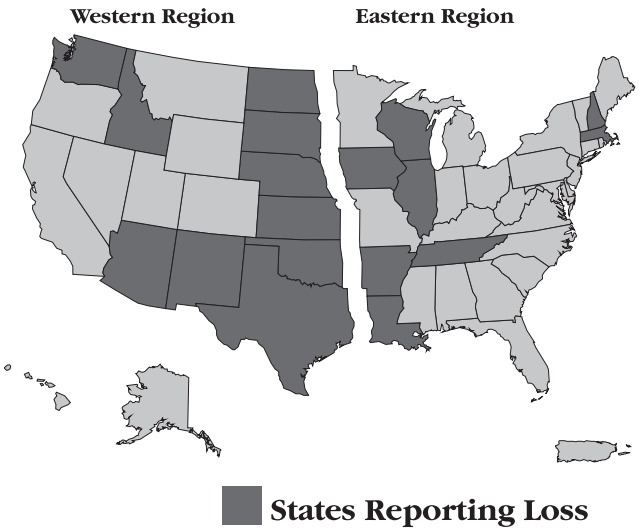

Fig. 1. States reporting agriculture loss caused by blackbirds in every year of period (FYs 1996-2000)

Human Health and Safety

- Total dollar value of human health and safety conflicts reported to the WS program for FY 1996 and FY 1997 totaled $204,453. This is approximately 7.2% of all resources for the same fiscal years.
- States reporting health and safety conflicts in every year of the reporting period (FY 1996-2000) are shown in Fig. 2.

Property

- Total dollar value of property loss reported to the WS program for FY 1996 and FY 1997 totaled $136,340. This is approximately 4.81% of all resources for the same fiscal years.
- States reporting property damage in every year of the reporting period (FY 1996-2000) are shown in Fig. 3.

Fig. 2. States reporting human health and safety conflicts caused by blackbirds in every year of period (FYs 1996-2000)

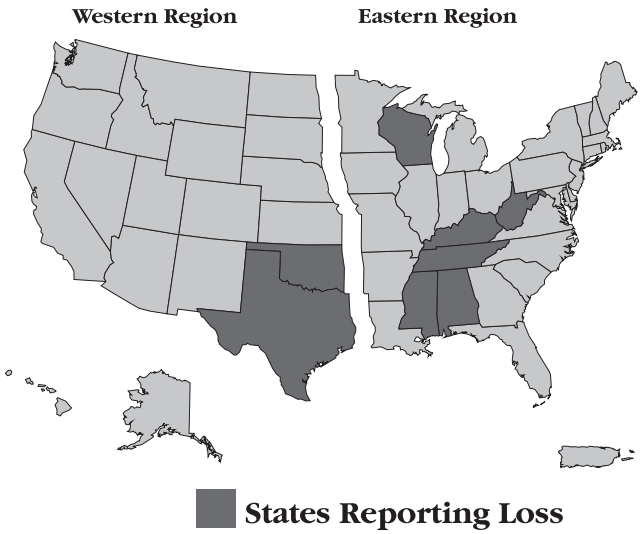

Fig. 3. States reporting property loss caused by blackbirds in every year of period (FYs 1996-2000)

Natural Resources

- Total dollar value of natural resource loss reported to the WS program for FY 1996 and FY 1997 combined totaled $10,000. This is approximately 0.35% of all resources for the same fiscal years.
- There were no states that reported natural resource loss in every year of the reporting period (FY 1996-2000)

TYPE OF ASSISTANCE PROVIDED

Like many wildlife managers who address conflicts between wildlife and people, WS personnel

must thoughtfully consider the needs of those directly affected by wildlife and a range of environmental, sociocultural, economic, and legal factors. When initially developing and analyzing various strategies of wildlife damage management, WS personnel are required to be aware of, and abide by, all laws and regulations that may affect the options available to manage a particular problem.

For example, blackbirds are native migratory birds and thus come under the jurisdiction of the federal Migratory Bird Treaty Act (MBTA), a formal treaty with Canada and Mexico. Regulations implementing the MBTA are found in Title 50 of the Code of Federal Regulations. According to the regulations, blackbirds may be taken when found "committing or about to commit depredations upon ornamental or shade trees, agricultural crops, livestock, or wildlife, or when concentrated in such numbers and manner as to constitute a health hazard or other nuisance." Some states and local governments may have additional restrictions on killing blackbirds. On the other hand, unlike blackbirds, starlings and house sparrows (*Passer domesticus*) were introduced from Europe and thus are not protected by the MBTA.

Keeping all the above considerations in mind, Wildlife Services personnel use 2 methods – technical and direct – to provide wildlife damage management assistance to the public.

Technical Assistance

Technical assistance involves providing advice, recommendations, information, or materials for use in managing wildlife damage problems. WS employees also help identify the responsible wildlife species and determine the extent of the damage. WS personnel may provide recommendations concerning habitat modification or cultural practices to reduce the likelihood of wildlife damage, behavior modification of the troublesome wildlife species, or ways to reduce specific, local wildlife populations to manage the amount of damage they cause. WS personnel can suggest lethal or nonlethal techniques to resolve wildlife damage problems. These suggestions always take into consideration environmental factors and relevant laws and regulations. WS personnel may provide a recommendation that regulatory agencies issue permits to allow resource owners to deal with wildlife problems.

Direct Assistance

Technical assistance alone might not be adequate to help solve a particular wildlife conflict. Frequently, there are problems caused by wildlife species that may be too complex or difficult for any one individual, group, or agency to solve.

A common example might be the problem caused by thousands of birds roosting in an urban neighborhood. Solving this type of problem is usually beyond the capability of most individuals. WS field personnel can provide direct assistance when the resource owner's efforts have proven ineffective and technical assistance alone is inadequate.

Direct assistance may also be provided when specialized knowledge, equipment, permits, or physical actions are beyond the capability of the individual requesting assistance in alleviating a wildlife conflict. WS personnel consider practical methods for resolving wildlife damage problems and take actions by implementing the most strategically appropriate measures. Whether or not a particular action is appropriate or practical depends on a variety of factors, including the species causing damage, the type of damage, its geographic location, and as mentioned before, the consideration of various laws and regulations.

Often, the most effective strategy for resolving wildlife damage problems is an integration of several methods or approaches, either in unison or sequentially. WS personnel use this integrated wildlife damage manage approach to reduce damage by wildlife while minimizing potential harmful effects of the management measures on humans, nontarget wildlife, domestic livestock, and the environment.

In selecting management techniques for specific damage situations, WS professionals consider the species responsible for the damage; the magnitude of the conflict; geographic extent, duration and frequency of the resource loss; and the likelihood of the conflict being repeated. Additional factors to consider include the biological and legal status of the target species and potential nontarget species, local environmental conditions and possible environmental impacts, and the practicality of the available management options.

DAMAGE MANAGEMENT METHODS

Frightening

Frightening devices can be effective in protecting crops from flocks of blackbirds but require considerable work and long periods of application. The efficient use of these devices mandates that farmers persistently scare the birds before their feeding patterns become well- established. If significant damage is likely to occur in a field, an integrated pest management approach is most effective in protecting crops from blackbirds.

Propane exploders and pyrotechnic materials such as cracker shells, bird bangers, and screamers, are sometimes effective devices used to frighten birds from fields or other areas where the presence of birds is undesirable (Linz et al. 1997). A variety of other bird-

frightening devices, including electronic noise systems, helium-filled balloons tethered in fields, tape-recorded distress calls for birds, and various types of scarecrows, also are used to move birds from fields. The effectiveness of these types of equipment is highly variable and often depends upon the persistence of the operator, skill of the person using the equipment, the attractiveness of the crop, the number of birds, and availability of alternative food sources. Birds tend to adapt to frightening devices, therefore it is usually best to integrate the use of multiple types of equipment.

Chemical Frightening Agent

Avitrol® has been registered and used as a chemical frightening agent for blackbirds in corn and sunflower fields. Avitrol is usually mixed at a ratio of 1 treated corn particle and 98 particles of untreated corn and applied in swaths to a portion of a field to be protected using an all-terrain vehicle or airplane. When the target birds ingest 1 or more particles of treated bait, the chemical causes the birds to emit distress calls, fly erratically, and ultimately die. Factors that might negatively affect the performance of this product include heavy precipitation and availability of other more palatable food sources.

Chemical Population Management (Toxicants)

DRC-1339 (3-chloro-4-methyl benzenamine HCI, 3-chloro-4-methylaniline hydrochloride, Chemical Abstract Service Reg. No. 7745-89-3) is an avicide that is registered with the EPA for the management of damage caused by several species of birds including blackbirds, starlings, pigeons (*Columba livia*), crows (*Corvus brachyrhynchos*), ravens (*Corvus* spp.), magpies (*Pica pica*), and gulls (*Larus* spp.). Initially, DRC-1339 was developed jointly between commercial private entities and the USFWS. Both commercial entities and APHIS hold registrations of the product. A number of APHIS State Special Local Need (Section 24[c]) registrations also are available to help solve local problems, such as blackbirds in sunflower or rice. The appropriate label should always be referenced for the exact bait materials, preparation, dilution rates, restrictions, and other information or instructions, particularly since there are multiple labels with specific registered uses. The use of all APHIS DRC-1339 registrations is restricted to APHIS personnel trained in bird damage management or persons under their direct supervision.

Trapping

Blackbirds can be captured in large decoy cages. The size of these decoy cages vary and are made of poultry wire or some other netting or fencing material that encloses a wooden frame. Live decoy birds are maintained inside the enclosure with food and water. The cage is designed so that target bird species are readily able to enter the cage for food through small openings at the top, but are unable to actively exit the cage. The cage operator can release nontarget birds. Though these types of cages can be used to capture large numbers of birds per day, they are not ideal for the management of large roosting populations of birds damaging nearby crops. These cages are often used to reduce nest parasitism by brown-headed cowbirds (*Molothrus ater*), while helping the nesting success of threatened or endangered bird species such as the black-capped vireo (*Vireo atricapillus*), the golden-cheeked warbler (*Dendroica chrysoparia*), and Kirtland's warbler (*Dendroica kirtlandii*).

Cultural Practices

One strategy to reduce blackbird damage is to plant crops that do not attract the birds, such as soybeans, potatoes, or hay, in fields that are near a roost. Also, the timing of the harvest can be very important for reducing damage to crops from flocks of blackbirds.

Cattail Marsh Management

Blackbirds in the northern Great Plains use dense cattail marshes as roosts. Cattails may be sprayed with an approved herbicide to reduce their density, which disperses the blackbirds. The herbicide label should be reviewed to ensure the proper use of the product (Linz et al. 1997).

CONCLUSION

The WS program recognizes that wildlife is an important public resource greatly valued by the American people. Blackbirds and other wildlife are highly dynamic and mobile resources that can damage various private and industrial properties, agricultural resources, human health and safety, and natural resources. The need for cost-effective and environmentally-safe wildlife damage management is rising dramatically, while public scrutiny of these services is also increasing. The WS program, under legal authority and through scientific research, strives to develop and use wildlife damage management strategies that are biologically sound, environmentally-safe, and socially acceptable. WS program personnel provide both direct and technical assistance to property owners, industrial producers, health and safety officials, natural resource managers, and agricultural livestock producers and growers who are trying to protect their animals and crops from damage caused by blackbirds.

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